The lettuces by growth could be classed as (1) *heavy-type-salads*:—Ideal, Matchless, Iceberg, Mammoth Salamander, Black-seeded Simpson, Way-ahead, Mignonette, Golden Queen, Golden Ball, Algiers; or (2) *light weights.*—Early curled Simpson, Grand Rapids forcing, Trianon self-folding, Wonderful, Nonsuch, and White heart.

Of Suttons' the following showed themselves *early*:—Ideal, Matchless, Nonsuch, White heart, White Golden ball and Early Paris: —of Dreer's, Trianon self-folding, Mignonette, Big Boston, Early Curled Simpson, Mammoth Salamander, Iceberg, Black-seeded Simpson.

Of Dreer's the following showed themselves late: Golden Queen, Improved Hanson, Grand Rapids forcing, Way-ahead, Hittinger's Belmont, California cream butter.

The cost of cultivation is very low as under: and a man can manage one fifth of an acre with ease.

Cost of cultivation for one tenth acre	$40.57
Gross yield per one tenth acre	60.00
Total net income	19.43

G. B. Deshmukh.

AN EXPERIMENT WITH SORGHUM VULGARE, THE GREAT MILLET OR JUAR, FROM THE BOMBAY PRESIDENCY.

The accompanying plate shows (behind the men who stand in it) a plot measuring 25 feet long by 10 feet, planted with millet at 12 by 12 inches in all directions. The smaller plants in front of the men do not belong to the plot. This millet, which is in ear, is a race raised from seed kindly supplied by Dr. Harold H. Mann, Director of Agriculture, Bombay, as one of the best of the district of Khandesh, its exact origin being the town of Jalgaon in the Tapti Valley. The seed was one of two lots received together, the other being from Ahmednagar, Bombay Presidency.

The two lots were sown in contiguous plots on 21st August 1919, the sowing being done by hand in shallow channels traced along the ground at one foot apart.

Three weeks after, thinning out took place, the pick of the thinned-out seedlings being transplanted to a second plot near by. These operations were both done on the same day for the two lots; and the transplanted plots were also contiguous. It may therefore be said that both races were raised under absolutely identical conditions of soil, of weather and of cultivation. Both races suffered in the same degree from the attacks of the sugar cane borer (*Chilo simplex*) which was found in almost every stem and also from "aphids" and from bird-depredation. Yet the difference of growth and of yield between the two varieties was very remarkable.

A, the Ahmednagar Sorghum ran to leaf: it grew to stems from 8 to 14 feet high, with abundance of leaves but the panicles so small (from 2 to 4 inches in length only) as to be of no account at all, so that as a cereal crop it was valueless, although as a fodder crop, it would have a value.

B, the Jalgaon sorghum, as shown in the photo. varied in height from 4 to 7 or 8 feet, with a full heavy and rather close, but not compact head of grain,* and altogether the crop, as a cereal may be said to be a very profitable one, as the figures below will show.

A fact worthy of notice is that this plant, from a region of India where the rainfall is a light one, has succeeded under very diverse conditions of climate.

Another point which deserves notice is that the plots which were planted from thinnings throve better than the plots raised direct from seed—a fact which upsets the dictum that Sorghum does not stand transplanting well.

The result of this first cutting was:

Sown plot, 142 stems were cut weighing, with leaves 31 pounds: the 142 panicles collected weighed 8¾ pounds, after two days drying that is to say that each panicle weighed dry, 1 ounce. The final result was 5 lb. dry grain.

Transplanted plot, 223 stems were cut weighing with leaves 102 pounds; the 223 panicles collected weighed 23¾ pounds, afer two days drying, that is to say that each panicle weighed dry 1.70 ounce. The final result was 15 lb. 5.03 oz. dry grain.

As previously stated, the whole crop was attacked by the sugar cane borer, which creeps through the stem and feeds on its substance; the damage done, however, was confined to a small portion of the stem below the seeding head, and, in no case, were the panicles damaged by it: the pest which is very easily traced by the red excretious which exude from its tunnel, was easily dealt with by injecting sulphur by means of a rubber puff into the hole, or by introducing a thin wire through the hole; this either forces it out or kills it.

The panicles themselves were damaged to a small extent by aphids, and by a small weevil, which however gave way after repeated dustings with sulphur.

Birds were the most serious enemies to this crop, and it took all the shouting and tin-beating of a small boy on the watch to keep them off. A very effective device to scare the birds away, a device put up by the coolie himself, was found to be the following:—

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* It is a rule in India that the Sorghums with very compact heads are grown in the wide plains where field joins on to field and there is no forest; while near forest such sorghums as may be grown are commonly those with open panicles. The Jalgaon Sorghum is of neither extreme; for with grains just touching, it combines fine pedicels under them. It has been thought that loose eared races are chosen by cultivators near forests because they are less subjected to bird depredation, but it may be said that they are also suited to a moister climate than the others.

The expanded skin of a flying-fox (after the body had been "scooped" out) was stretched to its full length of wing on a frame of bamboo, half rigid, half flexible, attached at both ends to the tips of the extended wings. The main bamboo. *i.e.* that which extends from tip to tip, is slightly bent, like a bow, so that, when taken hold of by the middle, and moved about, the wings, following the movement of the resilient bamboo, appear as if they were actually on the flight. The contrivance is attached at the top of a pole stuck in the middle of the field; a boy, in the distance, holds a string by which the pole is pulled: at the least tug, the bamboo bends and unbends, giving the skin a flying motion which scares the birds away—at least for a time.

Sorghum is one of the most important cereal crops of the world, its grain supplying a wholesome food which is largely consumed in all Asiatic countries. Estate coolies generally prefer it to "Ragi" (*Eleusine coracana*) over which it has the advantage that its grain can be cooked and eaten whole, whereas Ragi has to be ground into flour: it is also made into bread which is as nourishing as wheaten bread. It therefore commends itself particularly and strongly, at the time of rice and wheat shortage, to the attention of planters.

The returns of land under Sorghum cultivated as a pure crop, are variously given for India, as between 500 to 900 pounds of grain per acre (Watt's Dictionary, Mukerji, Macmillan). The seed in that country is generally drilled in rows 14 to 18 inches apart. The writer as already stated, had his seed sown in rows 12 inches apart, then thinned and transplanted at the same distances, viz: 12 inches by 12 inches.

Given a rich soil, the resulting crop appears to justify the practice of transplanting in this country and although it would be absurd to generalise from such small plots as are here in question, viz: 280 square feet, yet the amount of grain obtained was so much greater, (in the transplanted plot) than the averages given above for India, that it compels comment.

Reverting to the figures of yield previously stated, we found that 280 square feet of Jalgaon Sorghum planted 12 by 12 inches gave in one cutting, the following results:

Transplanted plot, 223 panicles weighing 23¾ pounds yielding 15 lb. 5.30 oz. of dry grain.

Sown plot, 142 panicles weighing 8¾ pounds yielding 5 lb. of dry grain.

The figures for the second cutting, which took place one week later on, by an unfortunate inadvertance, are not available. The panicles were, of course, much smaller, and the weight of grain obtained from them would have affected but slightly the final result. By neglecting them altogether, we shall strengthen our view that

Jalgaon Sorghum firstly may maintain its yielding capacity† under our local soil and climate conditions, secondly that transplanting increases the yield of grain.

Allowing for paths and computing one acre at 40,000 feet, we should come to the following figures:

Transplanted plot: 280 square feet 15 lbs. 5 ozs. of dry grain.
Sown plot: 280 square feet 5 lbs.
One acre—714 pounds dry grain.

In the light of the foregoing averages for India viz. 500 to 900 lb. per acre, the figure for the transplanted plot appears absolutely abnormal; but, then, so was the size and weight of the panicles. One, among the number, weighing 3¼ ounces was found after picking the seeds one by one, to give 2¼ ounces of seeds, the rachis weighing one ounce.

E. H. Mathieu.

A NOTE UPON PLANTS GROWN FOR BLUE DYES IN THE NORTH OF THE MALAY PENINSULA.

Within the last few years a little information has reached the Botanic Gardens upon plants raised in the north of the Peninsula for the sake of the blue dye that they yield: and three have been submitted for determination being:—

Indigofera suffruticosa, Mill.
Strobilanthes flaccidifolius, Nees, and
Marsdenia tinctoria, R. Br.

The first two of the three were sent from the state of Kelantan by Mr. R. J. Farrer, the latter two of the three from Upper Perak by Captain H. Berkeley. All three are well known as dye-plants; but as a dyeing industry flickers only within the Peninsula, it is interesting to ask what influence may have brought them into cultivation here.

Indigo cultivation has a long and a very complicated history; and the above named species of *Indigofera* is one only of half a dozen grown in different parts of the world. Indigo, almost certainly imported, was used as a dye in ancient Egypt; for mummy clothes of 2300 B.C. have been found dyed with it. It was prepared in ancient India, and finds mention in the sanskrit writings of about the same period. It was an expensive import of Rome at the commencement of the Christian era, coming from India via Alexandria, and bearing the name "indicum" from its source. It is extremely probable that Ancient Egypt also got its indigo from India.

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† Misfortune attended an attempt to repeat this experiment; for rain fell heavily at harvest destroying the grain; and it is feared that the climate of Singapore in too unreliable for the crop; but in the north of the Peninsula if maturity be aimed at in February the chances of a return would appear good. I. H. Burkill.